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CLAIMS

What is claimed is:

1. An isolated protein comprising a sequence of amino acid residues that is at least 95% identical to SEQ ID NO:2 from Ile, residue 111, through Asn, residue 373, wherein said protein is a protease or protease precursor.

2. The isolated protein of claim 1 having from 254 to 398 amino acid residues.

3. The isolated protein of claim 1 wherein said protein comprises residues 111 through 373 of SEQ ID NO:2 or SEQ ID NO:15.

4. The isolated protein of claim 1 wherein said protein comprises residues 111 through 364 of SEQ ID NO:18.

5. The isolated protein of claim 1 comprising residues 1 through 373 of SEQ ID NO:2 or SEQ ID NO:15.

6. The isolated protein of claim 1 comprising residues 1 through 364 of SEQ ID NO:18.

7. The isolated protein of claim 1, further comprising a heterologous affinity tag or binding domain.

8. An isolated polynucleotide up to 1800 nucleotides in length, said polynucleotide encoding a protein comprising a sequence of amino acid residues that is at least 95% identical to SEQ ID NO:2 from Ile, residue 111, through Asn, residue 373, wherein said protein is a protease or protease precursor.

9. The isolated polynucleotide of claim 8 which is DNA.

10. The isolated polynucleotide of claim 9 wherein said DNA is double-stranded.

11. The isolated polynucleotide of claim 8 wherein said protein comprises residues -19 through 373 of SEQ ID NO:2 or SEQ ID NO:15.

12. The isolated polynucleotide of claim 8 wherein said protein comprises residues -19 through 364 of SEQ ID NO:18.

13. An expression vector comprising the following operably linked elements:

a transcription promoter;

a DNA segment encoding a protein comprising a sequence of amino acid residues that is at least 95% identical to SEQ ID NO:2 from Ile, residue 111, through Asn, residue 373, wherein said protein is a protease or protease precursor; and

a transcription terminator.

14. The expression vector of claim 13 wherein said protein comprises residues 111 through 373 of SEQ ID NO:2 or SEQ ID NO:15.

15. The expression vector of claim 13 wherein said protein comprises residues 111 through 364 of SEQ ID NO:18.

16. The expression vector of claim 13 wherein said protein comprises residues 1 through 373 of SEQ ID NO:2 or SEQ ID NO:15.

17. The expression vector of claim 13 wherein said protein comprises residues 1 through 364 of SEQ ID NO:18.

18. The expression vector of claim 13 further comprising a secretory signal sequence operably linked to said DNA segment.

19. The expression vector of claim 18 wherein said secretory signal sequence encodes amino acid residues -19 through -1 of SEQ ID NO:2.

20. A cultured cell containing an expression vector according to claim 13 wherein said cell expresses said DNA segment.

21. The cultured cell of claim 20 wherein the expression vector further comprises a secretory signal sequence operably linked to said DNA segment and the cell secretes said protein.

22. A method of making a protease or protease precursor comprising:

(a) providing a host cell containing an expression vector comprising the following operably linked elements:

(i) a transcription promoter;

(ii) a DNA segment encoding a protein comprising a sequence of amino acid residues that is at least 95% identical SEQ ID NO:2 from Ile, residue 111, through Asn, residue 373, wherein said protein is a protease or protease precursor; and

(iii) a transcription terminator, whereby said cell expresses said DNA segment;

(b) culturing said host cell under conditions whereby said DNA segment is expressed; and

(c) recovering the protein encoded by said DNA segment.

23. The method of claim 22 wherein the expression vector further comprises a secretory signal sequence operably linked to said DNA segment, the cell secretes the protein into a culture medium, and the protein is recovered from the medium.

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24. A method of cleaving a peptide bond of a substrate protein comprising incubating said substrate protein in the presence of a second protein comprising a sequence of amino acid residues that is at least 95% identical to SEQ ID NO:2 from Ile, residue 111, through Asn, residue 373, whereby said peptide bond is cleaved.

25. A method according to claim 24 wherein said second protein is a protease precursor and said method further comprises the step of activating the second protein before said peptide bond is cleaved.

26. A method of detecting an inhibitor of proteolysis within a test sample comprising:

(a) measuring proteolytic activity of a protein comprising a sequence of amino acid residues that is at least 95% identical to SEQ ID NO:2 from Ile, residue 111, through Asn, residue 373 in the presence of a test sample to obtain a first value;

(b) measuring proteolytic activity of said protein in the absence of said test sample to obtain a second value; and

(c) comparing said first and second values, whereby a higher second value relative to said first value is indicative of an inhibitor of proteolysis within said test sample.

27. An antibody that specifically binds to a protein comprising a sequence of amino acid residues that is at least 95% identical to SEQ ID NO:2 from Ile, residue 111,

through Asn, residue 373, wherein said protein is a protease or protease precursor.

28. A DNA construct encoding a polypeptide fusion, said fusion comprising, from amino terminus to carboxyl terminus, amino acid residues -19 through -1 of SEQ ID NO:2 operably linked to an additional polypeptide.